

CLAIMS

1. A stamped rivet for connection of sheet metal comprising a head, an adjacent shaft, a circumferential groove formed in said shaft, and a shaft end opposite to said head, wherein the head (12, 12') is provided on a bottom thereof with a circular planar surface (20, 20') facing the shaft (14, 14'), the circumferential groove (16, 16') is directly adjacent to the bottom of the head (12, 12'), and a section of the shaft (14, 14') in an area located between the circumferential groove (16, 16') and the shaft end (18, 18') conically tapers towards the shaft end (18, 18') forming a tapering section.
2. A stamped rivet according to claim 1, wherein the tapering section (22) extends to a cylindrical end section (28) of the shaft (14).
3. A stamped rivet according to claim 1, wherein the tapering section (22') extends to the end of the shaft (18').
4. A stamped rivet according to one of claims 1 through 3, wherein the tapering section (22, 22) is directly adjacent to the circumferential groove (16, 16').
5. A stamped rivet according to one of claims 1 through 3, wherein a cylindrical section of the shaft (30, 30') is directly adjacent to the circumferential groove (16, 16') and extends to the tapering section (22, 22') of the shaft (14, 14').
6. A stamped rivet according to one of claims 1 through 5, wherein the circumferential groove (16, 16') extends to a longitudinal center (M, M') of the stamped rivet (10, 10').

7. A stamped rivet according to one of claims 1 through 6, wherein the tapering section (16, 16') of the shaft (14, 14') has an axial length (V, V') generally equivalent to an axial length (L, L') of the circumferential groove (16, 16').
8. A stamped rivet according to one of claims 1 through 7, wherein the circumferential groove (16, 16') converges via a first radius (R1) into the planar surface (20, 20') at the bottom of the head (12, 12').
9. A stamped rivet according to one of claims 1 through 8, wherein the circumferential groove (16, 16') has, with reference to a longitudinal axis (34, 34') of a central area (36, 36') of the stamped rivet (10, 10'), a base parallel to the longitudinal axis (34, 34').
10. A stamped rivet according to one of claims 1 through 9, wherein the circumferential groove (16) converges into an adjacent shaft section (30) via a straight line (38) tilted in reference to the longitudinal axis (34) of the stamped rivet (10).
11. A stamped rivet according to claims 9 and 10, wherein the base of the circumferential groove (16) converges via a second radius (R2) into a straight line (38).
12. A stamped rivet according to one of claims 1 through 9, wherein the circumferential groove (16) converges via a third radius (R3) into an adjacent shaft section (30').

13. A stamped rivet according to claim 2, wherein the tapering section (22) converges via a fourth radius (R4) into the cylindrical end section (28).

14. A stamped rivet according to claim 5, wherein the cylindrical shaft section (30) converges via a fifth radius (R5) into the tapering section (22).

15. A stamped rivet according to one of claims 1 through 14, wherein the end of the shaft (18) is provided with sharp edges.

16. A stamped rivet according to claim 2, wherein the cylindrical end section (28) of the shaft (14) has a diameter (D1) equivalent to or slightly smaller than a smallest diameter (d) of the shaft (14) in an area of the circumferential groove (16).

17. A stamped rivet according to one of claims 1 through 16, wherein an axial length (L, L') of the circumferential groove (16, 16') is adapted to be greater than a thickness of a metal sheet or a total thickness of metal sheets (24, 26) to which a connection is to be made.

18. A method for placing a stamped rivet according to one of claims 1 through 17 for connection of metal sheets with the stamped rivet being forced through the sheet metal by way of a force acting from above onto the stamped rivet without pre-drilling and with formation of a punched hole, and subsequently the sheet metal material is forced into the circumferential groove under plastic deformation, wherein the sheet metal material in a first area surrounding the punched hole is displaced in a stamping direction by the stamped rivet, that subsequently the sheet metal material is displaced upward on the stamped rivet by way of a counter force from a bottom area, so that subsequently the stamped rivet is forced farther

downward through the punched hole until the head contacts the metal sheets with the planar surface, and finally the sheet metal material displaced in the stamping direction is plastically deformed into the circumferential groove by way of the counter force.